

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW HELIANTHUS FROM COLORADO.

BY T. D. A. COCKERELL.

In the vicinity of Boulder, Colorado, the species of perennial sunflowers are common. *Helianthus pumilus* Nutt. abounds in the foothill region, in rather dry, rocky places. *H. subrhomboides* Rydberg I have found by roadsides east of Boulder, moderately common. The third species is a tall plant common on ditch banks and by streams everywhere on the adjacent plains. Daniels, in his Flora of Boulder, Colorado, and vicinity (1911) calls this third species *H. grosseserratus* Martens, but also cites *H. fascicularis* Greene from Boulder, crediting the record to Rydberg. In his Flora of Colorado (1906) Rydberg gives a single record of *H. grosseserratus* from Fort Collins, but cites *H. fascicularis* from Fort Collins, Boulder, and other localities. According to the characters given in the key (Rydberg, l. c. p. 373), our plant is *fascicularis* and not *grosseserratus*.

The original *H. fascicularis* was described by Greene from Cimarron (Greene) and Gunnison (Baker). It is a plant of the Colorado mountain region, apparently quite distinct from that of the plains. Doctor Rydberg, however, believes that the two represent forms of a single species. I sent him a manuscript description of our Boulder plant and he kindly replied (litt. October 7, 1913): "*Helianthus fascicularis* was described from Colorado, and the type fits your description. It may be that *H. grosseserratus* of Daniels' Flora is the same. I do not remember that *H. grosseserratus* is found in Colorado. It may be that *H. fascicularis* Greene is not exactly the same as *H. utahensis*. I believe that the two represent the extreme forms of the same species, *H. fascicularis* representing the eastern and

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utahensis the western form.” In a later letter (October 16) Doctor Rydberg further discusses the question, and states that he has a specimen of the Boulder county plant.

In spite of this opinion, it seemed to me that both according to descriptions and herbarium material the plants were not the same, although I was obliged to admit that some of the apparent differences seen on comparing descriptions were fallacious. I accordingly appealed to Mr. Geo. E. Osterhout, who was familiar with both forms in life. He replied (November 6, 1913): “I had not thought that *Helianthus fascicularis* of the mountains and the *Helianthus* of the river and ditch banks about here (Windsor, Colorado) were the same. Doctor Rydberg in his Flora gives *H. grosseserratus* as occurring at Fort Collins; now I do not think there is any other *Helianthus* growing about Fort Collins different from the one with which we are familiar.* . . . When Greene and Nelson described the mountain plant I supposed that it was a different species, and it seems to me that they must have thought so, for they must have been more or less familiar with the plant of the plains, which was going for *H. grosseserratus*. The plant along the river here grows in quite large clusters, the peduncles are short, and the stems large and stout. The mountain plant is slender, the peduncles are long, and few stems are found growing together.” Mr. Osterhout further sends me a sheet of the plains plant, on which he had written long before the present discussion came up, “*Helianthus grosseserratus* (what I have taken for that) does not have leaves ‘hoary-downy beneath,’ nor are the scales ‘slightly ciliate,’ nor does it grow on ‘dry plains,’ as Gray’s Synoptical Flora says.” After prolonged consideration of the subject, I must agree with Doctor Rydberg that our plant is not *H. grosseserratus*, and with Mr. Osterhout that it is not *H. fascicularis*. It may therefore be separated as follows:

***Helianthus coloradensis* sp. nov.**

Perennial, fully six feet high, growing in clumps, beginning to flower early in August. Stems strict, very smooth, reddish, with a glaucous bloom. Leaves elongate-lanceolate, deep green, rough, with feebly and remotely dentate margins; upper leaves alternate, lower opposite. Involucral bracts very long and slender, about 16 mm. long, long-ciliate

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basally; disc bracts ordinary, pointed, without lateral lobes or teeth. Achenes perfectly glabrous; pappus-scales nearly two-thirds the length of the disc corollas, two in number, without intermediate squamellae, but the ray achenes are trigonal, and regularly possess three pappus scales; disc yellow; rays bright orange.

Very common at the type locality, few miles east of Boulder, Colorado. Type, No. 1, Cockerell.*

***Helianthus coloradensis andrewsi* var. nov.**

Rays deep orange, a much richer color than the type. Boulder (D. M. Andrews). Type, No. 2, Cockerell.

This is possibly a western subspecies of *H. grosseserratus*, but the leaves are only feebly dentate and beneath are scabrous and hardly pallid. It is not known that the plant meets the range of typical *grosseserratus*; but if it does, and intermediates are found, it will still be a question whether they are not hybrids. The ecological position of the plant is distinct, as well as some of the characters. According to Greene's description of *H. fascicularis*, that species differs by the solitary stems, only two or three feet high; leaves all (so far as the description shows) opposite, the blades 3-6 inches long (9 inches long in *coloradensis*); heads 1 to 3 (many in *coloradensis*); bracts mostly appressed (loose and spreading in *coloradensis*); pappus scales shorter. Comparing *H. coloradensis* with *H. utahensis* (*fascicularis*), as described by Nelson, the same differences appear, and in addition the disc of *utahensis* is said to be yellowish brown, whereas it is yellow in *coloradensis*. Later, Nelson has referred both *fascicularis* and *utahensis* to *H. nuttalli*.† I am indebted to Mr. Osterhout for the loan of a cotype of *H. fascicularis*, from Gunnison, Colorado, 7680 ft., August 16 (Baker, 816). Some of the characters supposed to be distinctive do not hold; the upper leaves are alternate, and the plant carries six heads. The color of the disc does not appear to differ from that of *H. coloradensis*. On the other hand, the stature is very much less than in *coloradensis*; a fully mature plant is 3 feet 6 inches high. The involucrel bracts are more or less spreading, at least the outer ones; but they do not extend conspicuously beyond the head in bud as they do in *coloradensis*. This difference is equally evident on comparison with a head of *H. fascicularis* from the Mogollon Mts., Socorro Co., New Mexico (Wooton), kindly sent by Mr. Standley. The leaf blades of the cotype *fascicularis* are about 4 inches long and $\frac{3}{4}$ inch broad, narrowly acuminate at both ends, with the subbasal lateral nervures coming off at a very acute angle, in entire contrast with the other

* I have no permanent herbarium, and all my plant types, so far as I have control of them, will go to the U. S. National Museum.

† On the Pacific coast the *nuttalli* group is represented by *H. californicus*, for fresh material of which (grown in the garden of the University of California) I am indebted to Dr. H. M. Hall. This plant is remarkable for having the achenes of the ray florets wholly without pappus scales, even in bud; the disc achenes have the usual pair of long pointed pappus scales. The involucrel bracts are sparsely hairy, but not ciliate.

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The real *fascicularis* is widely distributed in the mountains, going south into New Mexico, while Mr. Osterhout collected perfectly characteristic specimens in two different years at Bosworth's Ranch, Stove Prairie, Larimer Co., Colorado.

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